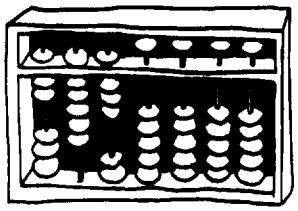

# Technical Notes

## New methodology reduces importance of used cars in the revised CPI

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The Consumer Price Index measures the average change in the prices paid by urban consumers for a fixed market basket of goods and services. The used car index, a subcomponent of the CPI, measures the average price change of used cars. The methodology used by the Bureau of Labor Statistics to produce the index has been improved since the introduction of used cars into the Consumer Price Index in December 1952. This study summarizes the methodology used to produce the index since the revision of the CPI in January 1987 and identifies the improvements made at that time.

The procedures utilized in the production of the used car index differ from those used in most other indexes which compose the Consumer Price Index in four significant areas: (1) derivation of expenditure weights, (2) the sampling frame, (3) the price data source, and (4) the need for a depreciated price. These differences occur because eligible vehicles enter the consumer market as used vehicles and depreciate in value over time.

### Expenditure weight for used cars

The weight assigned to used cars in the CPI reflects their significance in total consumer expenditures. Before January 1987, the CPI used car weight was based on data from the 1972–73 Consumer Expenditure Survey, which indicated a relative importance for used cars of 2.507 percent.

The 1987 revision of the CPI is based on the expenditure patterns from the 1982–84 Consumer Expenditure Survey. In this revision, a new methodology is used for computing the weight for used cars. The weight is computed from reported purchases of used cars less trade-ins on used cars, trade-ins on new cars, and all other sales of consumer-owned cars. This procedure treats all consumers as a single group for expenditure determinations. Consequently, the purchase of a used car by a consumer from another consumer, even if a dealer acts as an intermediary, is considered a transfer of wealth within the consumer group and does not affect the weight for the used cars index in the CPI. The procedure used in the past " . . . utilizing gross purchases less trade-ins assigned too high a weight to used cars . . . ".[1] In the current procedure, only the portion of a used car purchase attributed to dealer's profit margin is counted as an expenditure by consumers. This new methodology results in a relative importance for used cars of 1.249 percent as of December 1986.

In the new method, the used car weight is a residual which represents (1) consumer purchases of used cars sold by business and government entities, (2) dealer profit and related costs on used cars that had originally been owned by consumers, and (3) consumer purchases of cars that enter the U.S. market from abroad as used cars. The BLS conducted research to determine the relative magnitude of these components and found that about four-fifths of the weight is from used cars originally bought by business and government entities but later sold to consumers. Gross dealer profits on sales of used cars originally owned by consumers account for most of the remaining weight, while sales of used cars from abroad account for the balance. The used car sample is taken on cars previously owned by business and government entities because these cars represent most of the weight in the index. To account for the portion of the weight not covered in the sample, it is assumed that dealer profit margins do not change drastically and that the price movements of used cars from abroad are similar to those from business and government sales.[2]

### The used car sample

Prior to January 1987, the used car sample consisted of 21 cars. Each car was priced for models 2 through 6 years old, for a total of 105 vehicles tracked. The sample was selected using production totals for the 1970–74 model years and 1976 used car prices for those cars.

Currently, the sample consists of approximately 350 cars and is more reflective of the new definition of expenditures on used cars. From the universe of fleet cars (cars bought by business and government entities) in 1983 and 1985, a sample is selected using probability proportionate to size of the following characteristics: size class, body style, front or rear wheel drive, number of cylinders, make, and several options for which data are available on business and government purchases. All cars in the used car sample are domestic vehicles. Imports are eligible for

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all the countries except Japan, which has not had a decline in manufacturing output since 1975.

[4]The trade weights currently used by the International Monetary Fund (IMF)—to derive indicators of price competitiveness—relate to 17 industrial countries. See Anne K. McGuirk, "Measuring Price Competitiveness for Industrial Country Trade in Manufactures," IMF Working Paper, April 28, 1986. McGuirk recently expanded the coverage of the trade weights to include Hong Kong, Korea, Singapore, and Taiwan and provided the new weights to the authors.

If the trade data related to 1987, rather than 1980, Korea and Taiwan would have larger weights. Based on bilateral trade alone, that is, excluding the importance of "third country" markets, Korea and Taiwan's combined share of U.S. imports and exports of manufactured goods rose from about 5 percent in 1980 to more than 9 percent in 1987.

[5]See *United States Trade, Performance in 1987* (U.S. Department of Commerce, International Trade Administration, June 1988), p. 16.

[6]For example, see Robert Blanchfield and William Marsteller, "Rising export and import prices in 1987 reversed the trend of recent years," *Monthly Labor Review*, June 1988, pp. 3–19; Jeffrey A. Rosensweig and Paul D. Koch, "The U.S. Dollar and the 'Delayed *J*-Curve'," *Economic Review*, Federal Reserve Bank of Atlanta, July/August 1988, pp. 2–15; Paul R. Krugman and Richard E. Baldwin, "The Persistence of the U.S. Trade Deficit," *Brookings Papers on Economic Activity*, 1:1987, pp. 1–43; and Catherine L. Mann, "Prices, Profit Margins, and Exchange Rates," *Federal Reserve Bulletin*, June 1986, pp. 366–79.

## The welfare link to productivity

Advance in economic productivity is a means of improving living conditions for everyone. In its absence, increased income for some can only come at the expense of reduced income for others. The way the term welfare is most commonly used today, in connection with our welfare or transfer system, makes it evident that increases in economic productivity are a crucial element in social welfare policy.

The welfare of the dependent population, notably the children, the infirm, the retired, and the poor, is vitally affected by the productivity of those who produce the Nation's food, clothing, housing, medical care, and other GNP-type goods. The dependency ratio is often calculated as the ratio of the number of dependents (various classes of nonworkers) to the number of maintainers, or workers. However, each maintainer should not be counted without change over time as one person. This is because changes occur in the relative importance of high- and low-productive employees, hours of work per person and in output per labor-hour. The last mentioned factor has been the most important over a long period of years. Output per hour of workers doubled in the 25-year period 1947–1972. While the number of dependents increased, as did their benefits, the "ability" of a worker to support these welfare benefits also increased. Only through further increases in productivity, translated into increases in real compensation per hour, can these transfers to the dependent population be increased in real terms, without reducing the real incomes of the working population. The slowdown in recent years in the trend rate of productivity growth gives rise to added social concern in the context of the problems facing the U.S. welfare system.

—MILTON MOSS

"Welfare Dimensions of Productivity Measurement,"
in *Measurement and Interpretation of Productivity*
(Washington, National
Academy of Sciences, 1979), pp. 289–90.